

3.4 Right Triangle Trigonometry

Name _____ Date _____ Period _____

Find the acute angle α (in degrees) that satisfies each equation. Do not use a calculator.

1. $\sin \alpha = \frac{1}{\sqrt{2}}$

2. $\cos \alpha = \frac{\sqrt{3}}{2}$

Evaluate each expression without using a calculator. Give the result in degrees.

3. $\cos^{-1}\left(\frac{1}{2}\right)$

4. $\tan^{-1}(0)$

5. $\sin^{-1}\left(\frac{\sqrt{2}}{2}\right)$

Evaluate each expression using a calculator. Give the result in degrees to the nearest tenth.

6. $\cos^{-1}\left(\frac{1}{9}\right)$

7. $\tan^{-1}(2.43)$

8. $\sin^{-1}\left(\frac{2}{5}\right)$

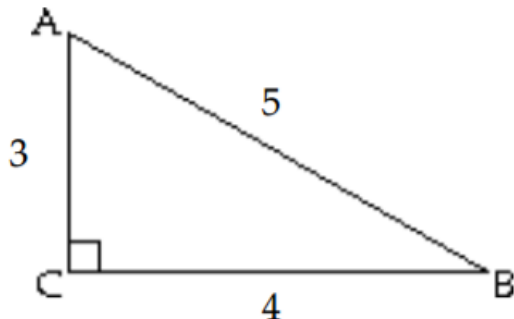
Use a calculator to find the acute angle α (to the nearest tenth of a degree) that satisfies each equation.

9. $\sin \alpha = 0.44$

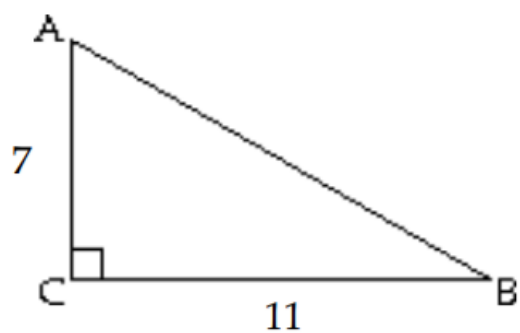
10. $\cos \alpha = 0.923$

Find the exact values of all six trigonometric functions for the angle A in each given right triangle.

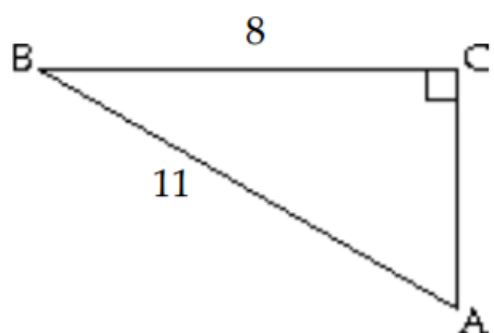
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12.

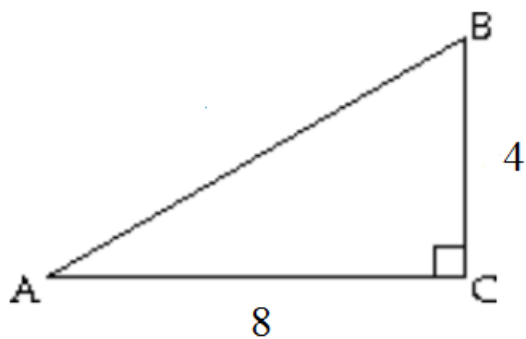


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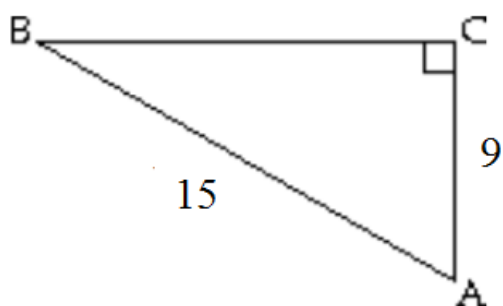


For each given right triangle, find the exact values of $\sin A$, $\cos A$, $\tan A$, $\sin B$, $\cos B$ and $\tan B$.

14.



15.



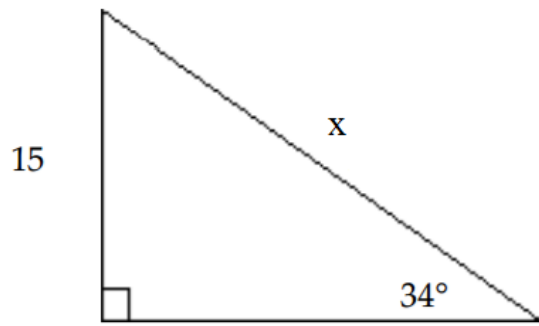
Solve each triangle with the given sides and angles. In each case, make a sketch. Round approximate answers to the nearest tenth.

16. $b = 6$, $c = 8.3$

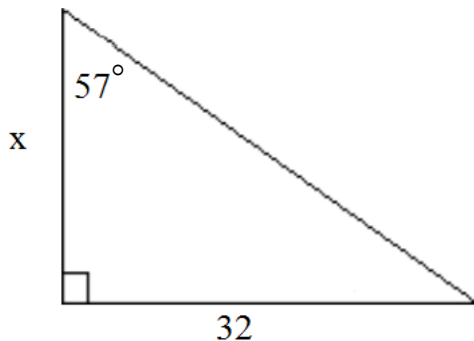
17. $\alpha = 39^\circ 9'$, $a = 9$

Use the proper trigonometric ratio to solve for x . Round answers to the nearest tenth.

18.



19.



20. An aerial photograph from a U-2 spy plane is taken of a building suspected of housing nuclear warheads. The photograph is made when the angle of elevation of the sun is 32 degrees. By comparing the shadow cast by the building to objects of known size in the photograph, analysts determine that the shadow is 80 ft. long. How tall is the building (to the nearest foot)? Draw a diagram and use the proper trigonometric ratio to solve.